JC-120/JC-160 SERVICE NOTES

Fifth Edition

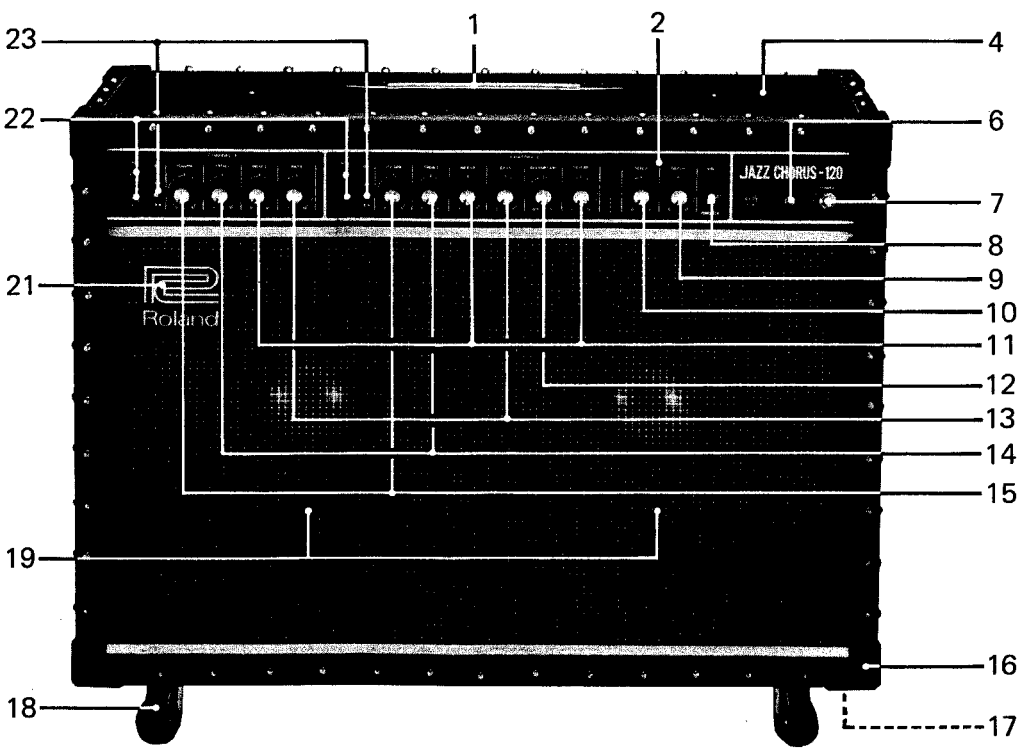
This Service Notes makes Fourth Edition (Printed MAR. 20, 1979) obsolete and includes its contents in PART 2 of this edition.

PART 1 (PP. 1 thru 4)	*JC-120*	*258100 and up (except USA)*
		293150 and up (USA only)
	JC-160	*254510 and up*
PART 2 (PP. 5 thru 8)	*JC-120*	*789500-248099*
		950100-283149 (USA only)
	JC-160	*782921-244509*
	JC-120A	*810600-001099*

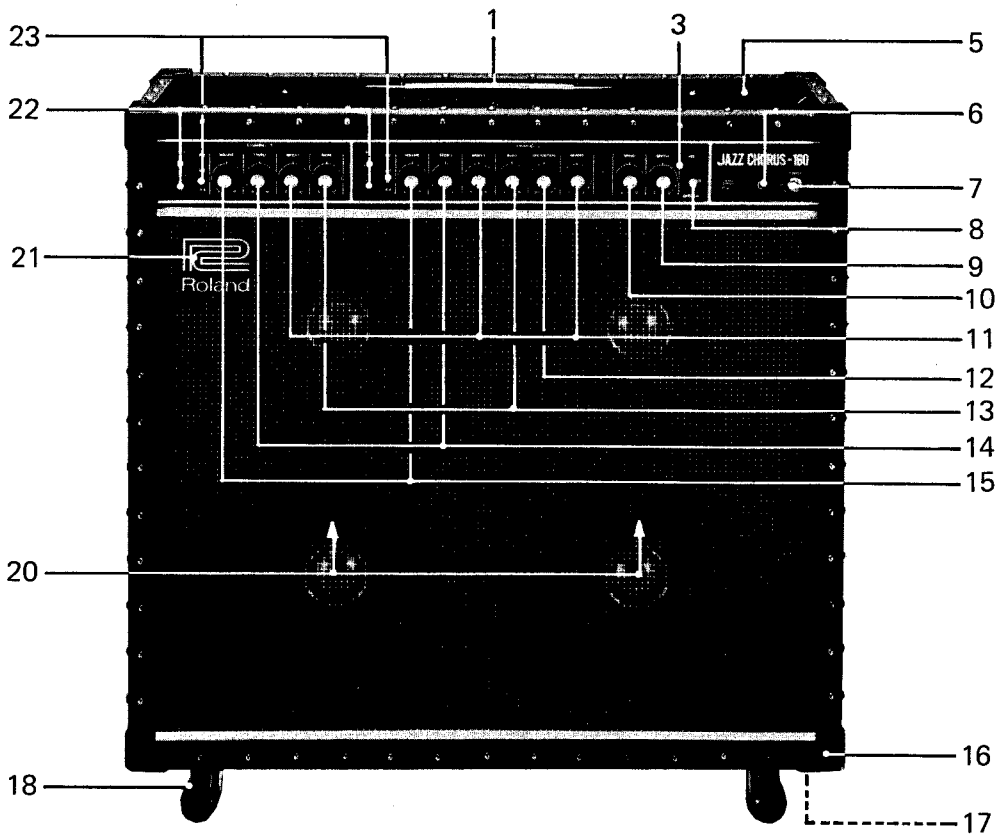
SPECIFICATIONS

Output	120W (rms)
Speaker	JC-120 30cm x 2 JC-160 25cm x 4
Power Consumption	400VA
Input Sensitivity (@ 1kHz)	HIGH 20mV LOW 60mV MAIN IN 800mV
Line Output	Level 100mV @1kHz Impedance 100Ω
Residual Noise	7-35mV per channel (varies with controls setting)
Tone Control Range	TREBLE 17dB @10kHz MIDDLE 13dB @350Hz BASS 14dB @50Hz BRIGHT 5dB @10kHz (VOLUME at center)
Dimensions (w/o caster)	JC-120 750(W) x 540(H) x 270(D) mm 29-1/2 x 21-1/4 x 10-5/8in JC-160 750(W) x 700(H) x 300(D) mm 29-1/2 x 27-1/2 x 11-3/4in
Weight	JC-120 28kg, 62 lbs JC-160 35kg, 77 lbs

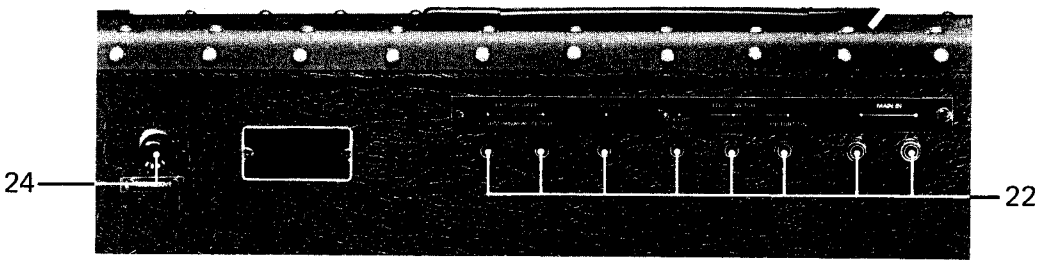
JC-120



JC-160

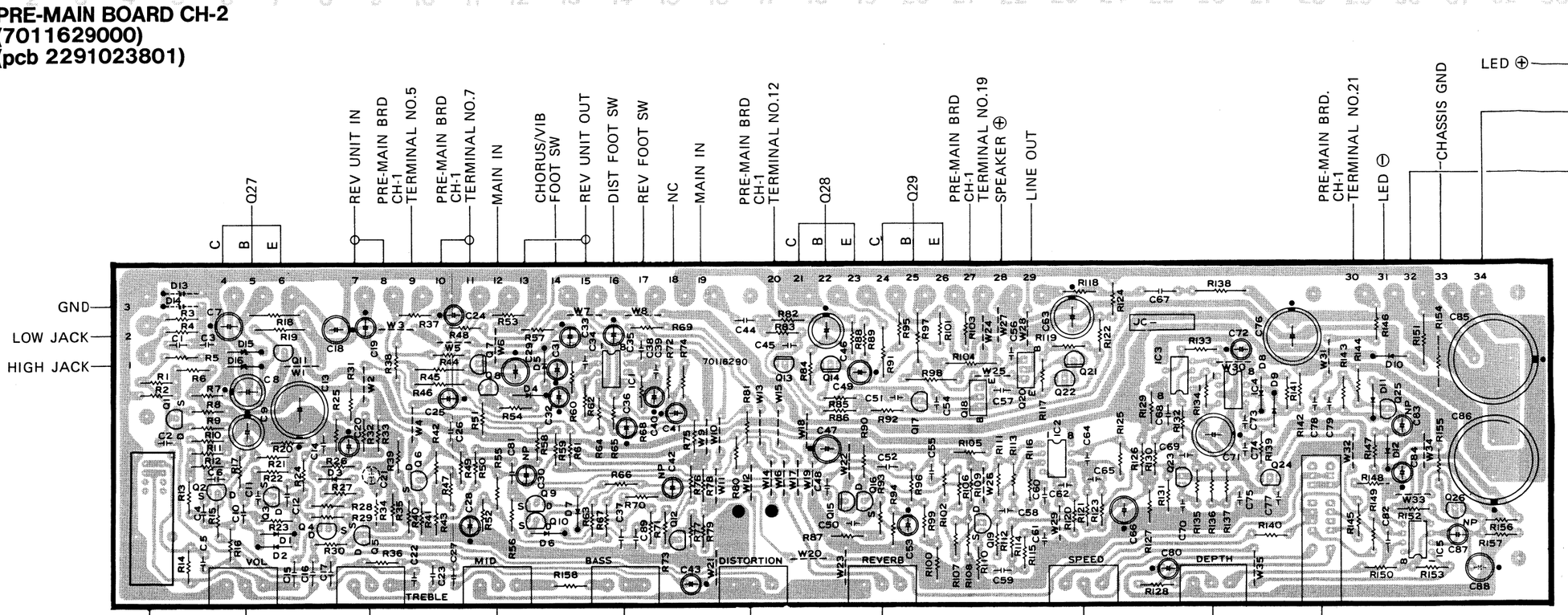


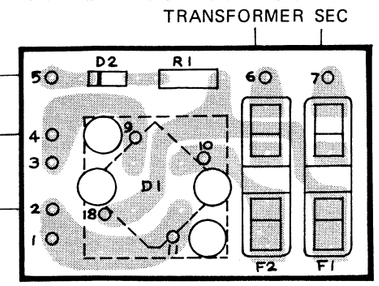
REAR



No.	Part Name (Part Number)		No.	Part Name (Part Number)
1	Handle H-30 w/cover (12319401)		13	BASS Pot. EVH-6PA361AF5 250kA (13219239)
2	Panel (2221020900)	Chassis		
3	Panel (2221021000)	(2281019900)	14	TREBLE Pot. EVH-6PA361BF5 250kB (13219282)
4	Cabinet Ass'y (2101013401) w/ caster Cabinet Ass'y (2101015501) w/o caster		15	VOLUME Pot. EVH-6PA361B16 1MB (13219283)
5	Cabinet Ass'y (2101013501) w/ caster Cabinet Ass'y (2101015701) w/o caster		9-15	Knob (2247012300)
6	LED SLP-4B (15029114)		16	Corner Protector (2234020200)
7	POWER Switch DS-239 6P (13139511) 100V S-7B-7 (13139507) 117V S-33 (13139505) 220/240V2P WD-13129 (13139515) 240V3P		17	Rubber Foot G-5
			18	Caster 420K-R50ϕ (detachable)
			19	Speaker 30-103D (2241020400)
8	VIB/CHORUS Switch Knob ESL-3654 (13139140) (2247011500)		20	Speaker 25-33D (2241030200)
			21	Badge (2251040200)
9	VIB DEPTH Pot. EVH-6PA361B15 100kB (13219213)		22	Jack SG-7615#1 (13449105)
			23	BRIGHT Switch SLR-022 (13139109)
10	VIB SPEED Pot. EVH-6PA361A15 100kA (13219210)		24	Fuse Holder SN-2059 (12199514) 100/117V or FH-032 SN-2250 (12199515) 220/240V or FH-033
11	MIDDLE. REVERB Pot. EVH-6PA361B14 10kB (132129212)			
12	DISTORTION Pot. w/SW EVH-6PGK20C14 10kC (13219801)			

PRE-MAIN BOARD CH-2 (7011629000) (pcb 2291023801)

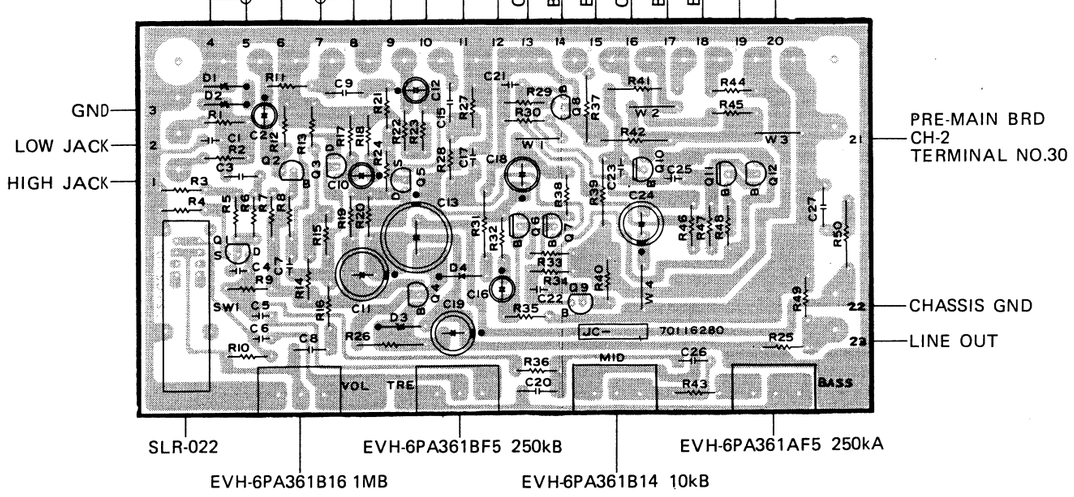


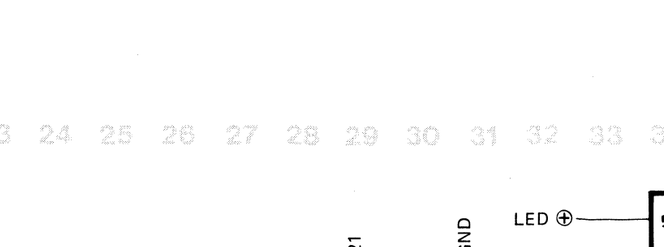


	FUSE	FUSE HOLDER
100/117V	MGC 6A	TF-757
220/240V	CEE T3.15A	TF-758

POWER SUPPLY BOARD 100/117V (7011627100) 220/240V (7011627400) (pcb 2291023901)

PRE-MAIN BOARD CH-1 (7011628000) (pcb 2291023701)





IMPORTANT
As shown on P.7, earlier speaker system (built in and EXT) is parallel connection.

When replacing PRE-MAIN BOARDs shown in the fourth edition with PCB on this page, take the following procedure.

REPLACING CH-1 ONLY

1. Remove insulating rubber from CH-1 INPUT jacks (Hi and Lo) and CH-1 EXT SP jack.
2. Place metal washer (1.6mm thick) between chassis (inside) and the jacks. Remount the jacks which are now chassisgrounded.
3. Remove wire ①. It becomes redundant and CH-1 terminal 21 on new PCB should be left unconnected.
4. Resolder wier ③ at 20 of the new PCB.
5. Remove R25 (100Ω) connecting to terminal 23 of new PCB.

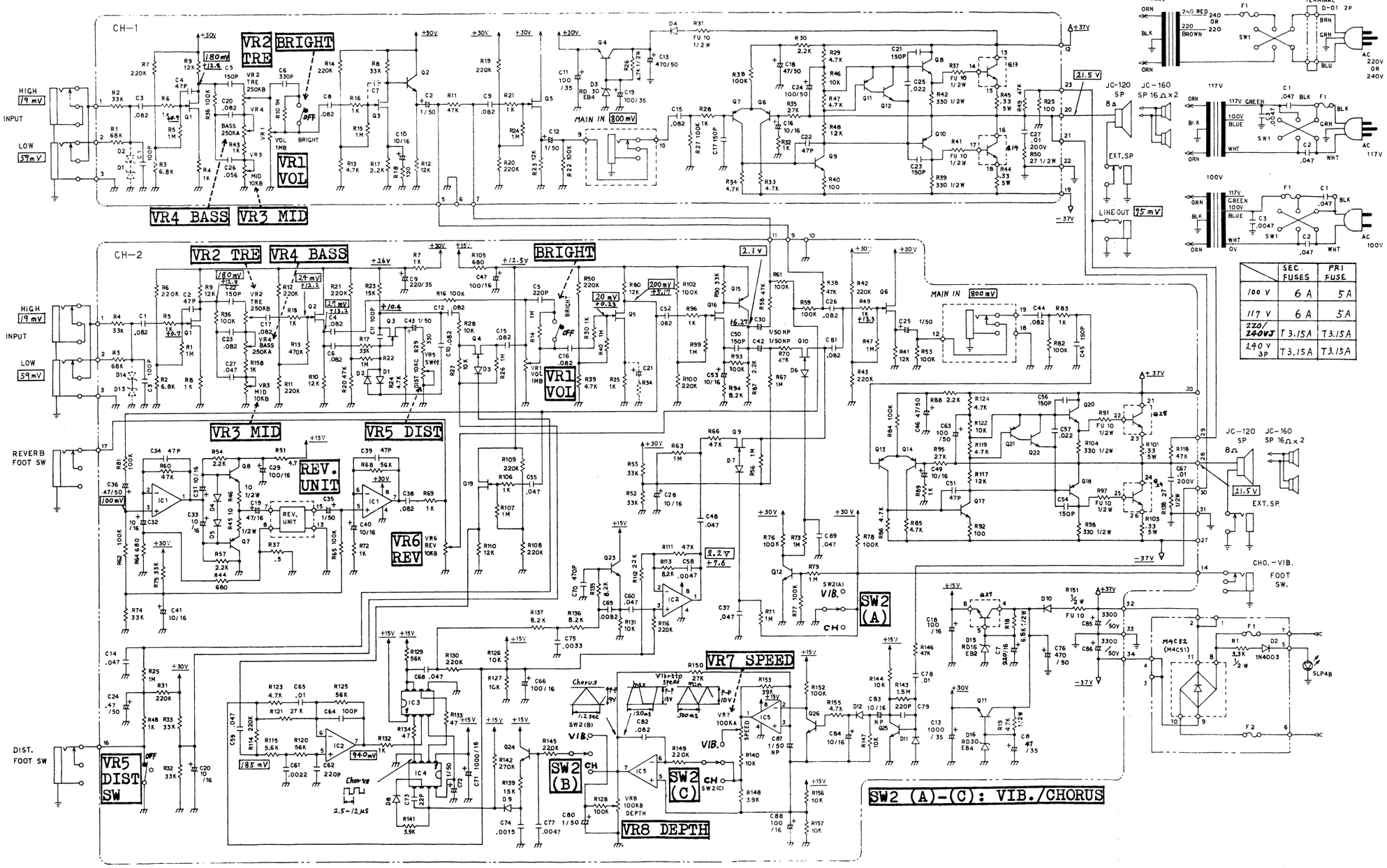
REPLACING CH-2 ONLY

1. Replace jack washers of CH-2 INPUT and EXT SP in the same manner as for CH-1.
2. Remove wire ②. Solder wire ③ from CH-1 terminal 20 at 30 of new CH-2.
3. Delete wire ④ and VR1 (terminals 35 and 36 are absent on new CH-2).
4. Remove R81 (100Ω) connecting to terminal 29 of old PCB and solder the 100Ω across terminal 29 and IC3 pin5 (GND) of the new PCB.

NOTE: New CH-2 PCB requires no adjustments.

REPLACING CH-1 and CH-2

1. Replace jack washers, referring to above paragraphs.
2. Remove wires ① ② ④. Rewire the remainder; most of wiring arrangement is similar to that on previous PCBs. Make sure of speaker connection and associated terminals:
   CH-1 . . . 20 and 21, CH-2 . . . 28 and 30.

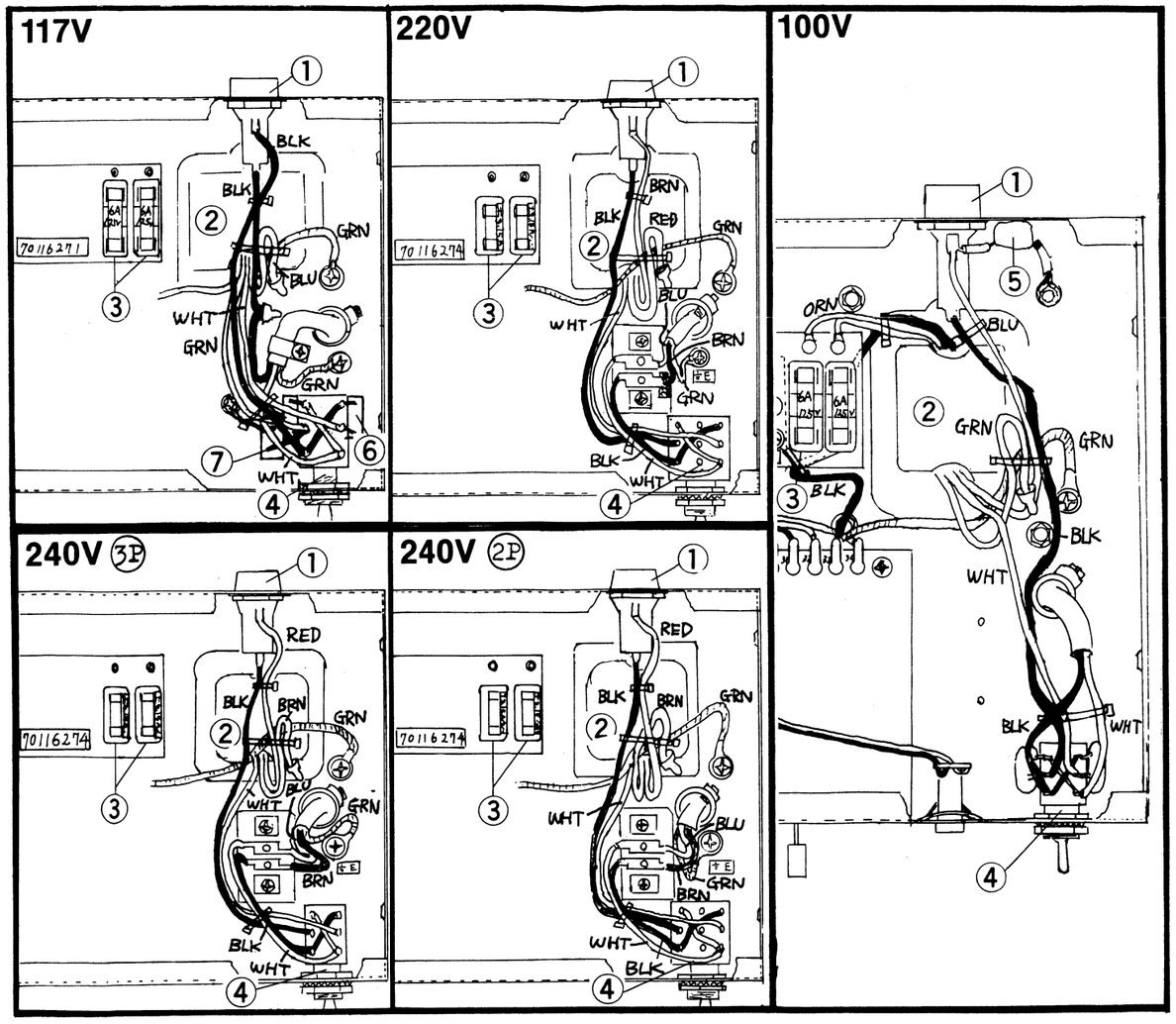


	SEC. FUSES	PRI FUSE
100 V	6 A	5A
117 V	6 A	5A
220/240VJ	T 3.15A	T3.15A
240 V 3P	T3.15A	T3.15A

CH-1			CH-2					
Q1, 3, 5	: 2SK117-GR	D3: RD-30EB4	Q1-3, 5, 6, 16, 19	: 2SK117-GR	Q20	: 2SD669-AC	IC1, 2, 5	: NJM4558DD
Q2, 12	: 2SC2240-GR	D4: 1N4003 or S5500G	Q4, 9, 10	: 2SK246-GR	Q22	: 2SC2240-GR	IC3	: MN3007
Q4	: 2SC667-C		Q7	: 2SB647-C	Q27	: 2SD313E or 2SC1624, 2SD880	IC4	: MN3101
Q6, 7, 11	: 2SA970-GR		Q8, 11	: 2SD667-C			D1-9, 11, 12	: 1S2473
Q9	: 2SC2229		Q12, 23-26	: 2SC1815-GR	Q28, 29	: 2SD845 or 2SC3182, 2SC2773, 2SC2564	D10	: 1N4003 or S5500G
Q8	: 2SD669-AC		Q13-15, 21	: 2SA970-GR				
Q10	: 2SB649-AC		Q17	: 2SC2229	IC1, 2, 5	: NJM4558DD	D15	: RD16EB2
Q13, 14	: 2SD845 or 2SC3182, 2SC2773, 2SC2564		Q18	: 2SB649-AC	IC3	: MN3007	D16	: RD30EB4

Secondary Winding Ratings (DC) 37V x 2 @2.5A 3300μF INPUT

Signal Voltages Taken Under Conditions:
Input ..... 1kHz sine
Tone controls ..... BASS-FCW
TRE-FCW
MID-FCCW
JACK COLD terminals not connected to PCB terminals are to chassis.



	100/117V	220/240V
1. PRI FUSE FUSE HOLDER	MGC 5A SN-2059 or FH-032	CEE T3. 15A SN-2250 or FH-033
2. SEC FUSE FUSE HOLDER	MGC 6A TF-757	CEE T3. 15A TF-758
3. TRANSFORMER	(22450273N0)	(22450274D0)
4. POWER SWITCH	DS-239 6P (100V) S-7B-7 (117V)	S-33 (220/240VJ) WD-13129 (240V3P)
5. Line Capacitor	ECQ-M6472MZ (100V)	
6. Line Capacitor	ECQ-UC1A473MC (117V)	
7. Line Capacitor	ECQ-UC1A472MC (117V)	

PARTS LIST

Parts marked with • are the same as those on early model. Only part numbers changed.

CABINET ASSEMBLY
(Including Handle, Badge, Corner Protector, Rubber Feet and Baffle Board)

2101013401	JC-120	
2101015501	JC-120 (with caster)	
2101013501	JC-160	
2101015701	JC-160 (with caster)	

PANEL

2221020900	JC-120	
2221021000	JC-160	
2281019900	Chassis	

SPEAKER

•2241020400	30-103D	JC-120
•2241030200	25-33D	JC-160

SWITCH

•13139511	DS-239 6P	POWER 100V
•13139507	S-7B-7	POWER 117V
13139505	S-33	POWER 220/240V2P
•13139515	WD-13129	POWER 240V3P
•13139109	SLR-022	BRIGHT
13139140	ESL-3654	VIB/CHORUS

JACK

•13449105	SG-7615#1	

POWER TRANSFORMER

22450273N0	100/117V	
22450274D0	220/240V	

REVERB UNIT

•12389101	Z-3F	

FUSE

•12559119	MGC 5A	pri. 100/117V
•12559120	MGC 6A	sec. 100/117V
•12559516	CEE T3.15A	220/240V

FUSE HOLDER

•12199514	SN-2095 or FH-032	pri. 100/117V
•12199515	SN-2250 or FH-033	pri. 220/240V
12199518	TF-757	sec. 100/117V
12199519	TF-758	sec. 220/240V

PCB ASSEMBLY

Compatible with the preceding revision only. See P.2 for detail.

7011628000	PRE-MAIN BOARD CH-1 (pcb 2291023701)	
7011629000	PRE-MAIN BOARD CH-2 (pcb 2291023801)	
•7011627100	POWER SUPPLY BOARD 100/117V (pcb 2291023901)	
•7011627400	POWER SUPPLY BOARD 220/240V (pcb 2291023901)	

POTENTIOMETER

13219212	EVH-6PA361B14 MIDDLE, REVERB	10kB
13219210	EVH-6PA361A15 VIB. SPEED	100kA
13219213	EVH-6PA361B15 VIB. DEPTH	100kB
13219239	EVH-6PA361AF5 BASS	250kA
13219282	EVH-6PA361BF5 TREBLE	250kB
13219283	EVH-6PA361B16 VOLUME	1MB
13219801	EVH-6PGK20C14 DISTORTION	10kC w/SW

IC

15189102	NJM-4558DD	
15219205	MN-3007BBD	
15169504	MN-3101 CLOCK GENERATOR/DRIVER	

TRANSISTOR

•15119111	2SA970-GR	
15119602	2SB647-C	
15119604	2SB649-AC	
•15129114	2SC1815-GR	
15129409	2SC2229	
•15129120	2SC2240-GR	
15129602	2SD667-C	
15129604	2SD669-AC	
15129820	2SD313-E or 2SC1624, 2SD880	
15129818	2SD845 or 2SC3182, 2SC2773, 2SC2564	

FET

•15139106	2SK117-GR	
15139112	2SK246-GR	

DIODE

•15019103	1S2473	
15019205	1N-4003 or S5500G	
15019560	RD16EB2	zener
15019582	RD30EB4	zener
•15019238	M4C-51 or M4C-52	rectifier
•15029114	SLP-4B	LED

CAPACITOR

13659234J0	NM50VNSN3300MA2 electro.	3300μF/50V
13549625M0	ECQ-M2103KZ polypropylene	0.01μF/200V
13549871M0	ECQ-M6472MZ polypropylene	0.0047μF/600V
13589452M0	ECQ-UC1A472MC polypropylene	0.0047μF
13589453M0	ECQ-UC1A473MC polypropylene	0.047μF

RESISTOR

13869301	0.33Ω 5W	cement
13829802M0	ERD-12FJ	27Ω½W non-flammable
12559702	FRNB	10Ω½W fusible

JC-120/JC-120A R&P, JC-160

SERVICE NOTES

APPLICABLE TO FOLLOWING SERIAL NUMBERS

JC-120 ——— 789500 — 248099
JC-120A R&P ——— 810600 — 001099
JC-160 ——— 782921 — 244509

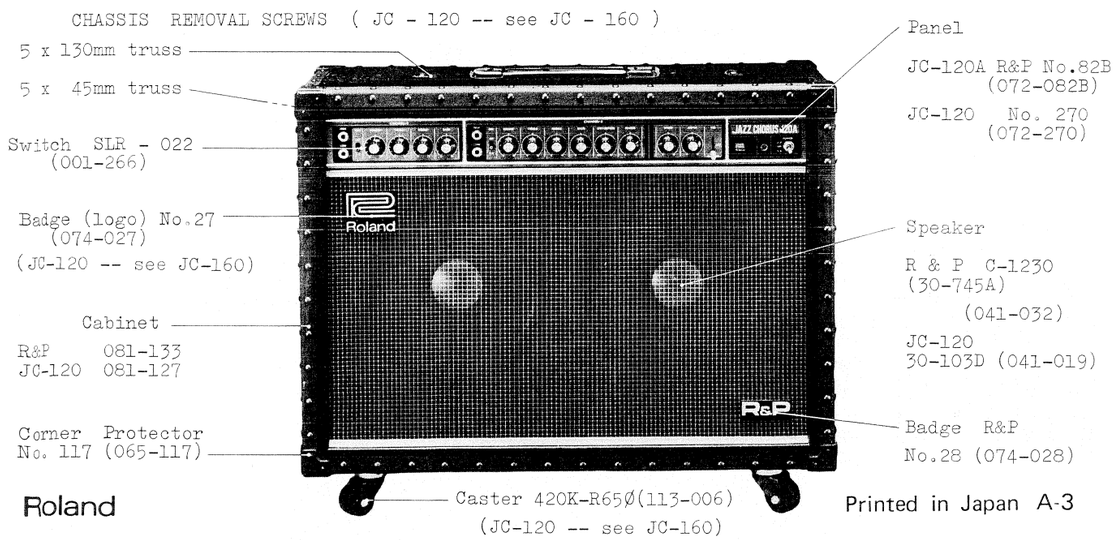
Fourth Edition

SPECIFICATIONS

OUTPUT POWER	22W RMS	per channel		into 8-ohm	
INPUT SENSITIVITY	HIGH	LOW		MAIN IN	700mV
	22mV	72mV	@ 1kHz		
	38mV		@ 100Hz		
	11mV		@ 10kHz		
INPUT IMPEDANCE	220k-ohm	82k-ohm	@ 1kHz	MAIN IN	68k-ohm
LINE OUTPUT	Level	100mV	@ 1kHz	IMPEDANCE	100-ohm
RESIDUAL NOISE	9---20mV	per channel (varies with controls setting)			
TONE CONTROL RANGE	TREBLE	38dB	@ 10kHz		
	MIDDLE	2dB	@ 1kHz		
	BASS	18dB	@ 100Hz		
	BRIGHT	4dB	@ 10kHz	VOLUME at	center

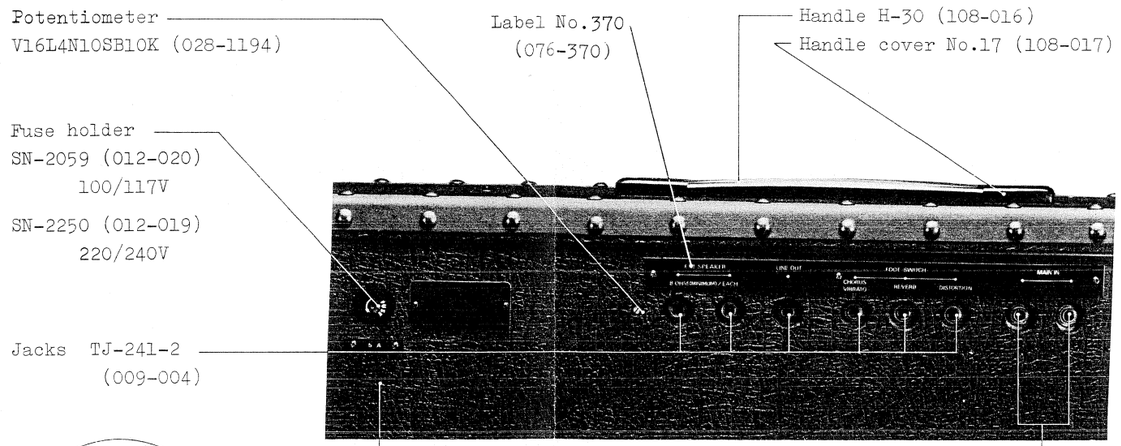
POWER CONSUMPTION	500VA	
DIMENSIONS	JC-120	750W x 540H x 270Dmm(29.6 x 21.2 x 10.6 in.)
	JC-120A R & P	774W x 634H x 270Dmm(30.5 x 25 x 10.6 in.)
	JC-160	750W x 700H x 240/300Dmm(29.5x27.6x94/118 in.)
WEIGHT	JC-120 28Kg (62 lbs)	JC-120A R&P 40Kg(88 lbs)
	JC-160 35Kg (77 lbs)	

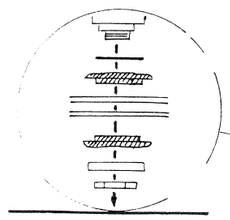
JC-120/JC-120A R&P (Photo)



PART COMMON TO JC-120, JC-120A R&P and JC-160

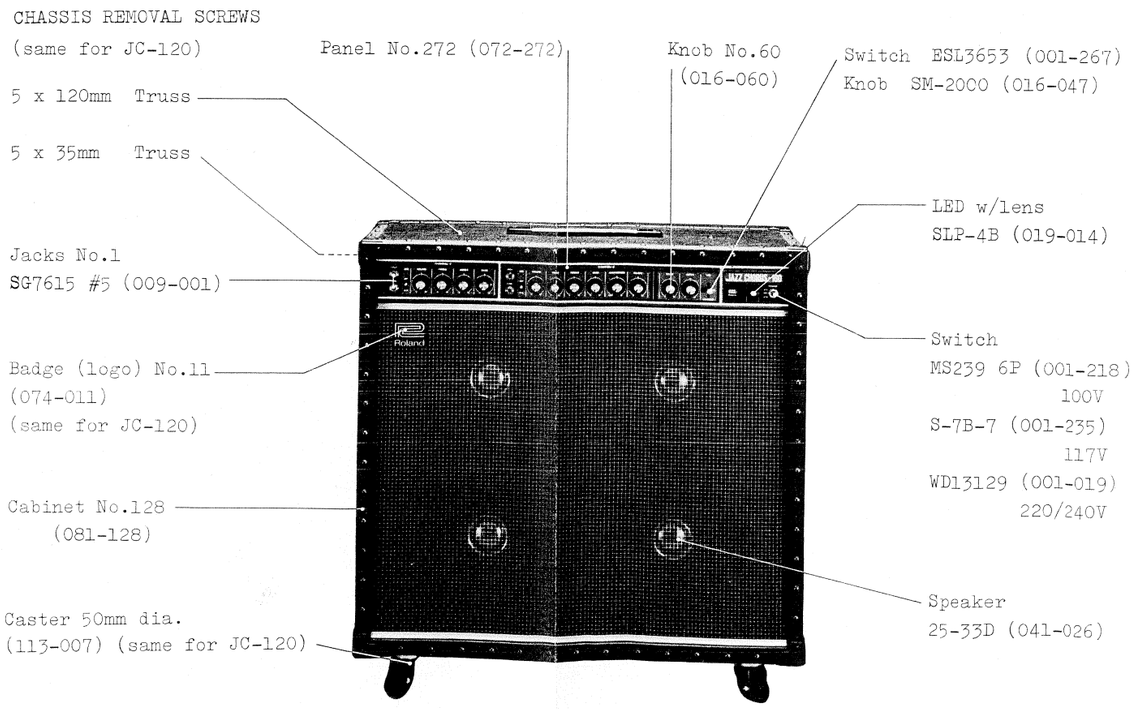
PARTS COMMON to ALL THREE MODELS are only once rather than being shown in each photograph.



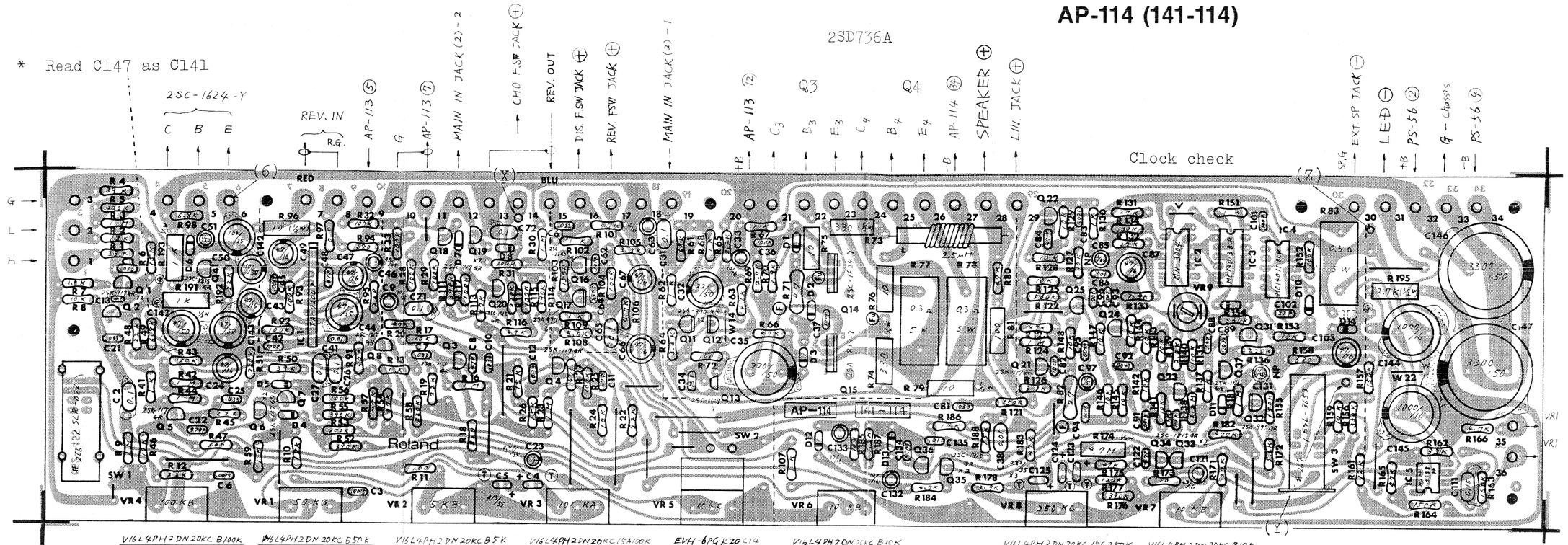


CAUTION: When replacing INPUT jacks on front or EXT SPEAKER jacks, use insulating bushings, otherwise hum or undesirable coloration may occur.

JC-160



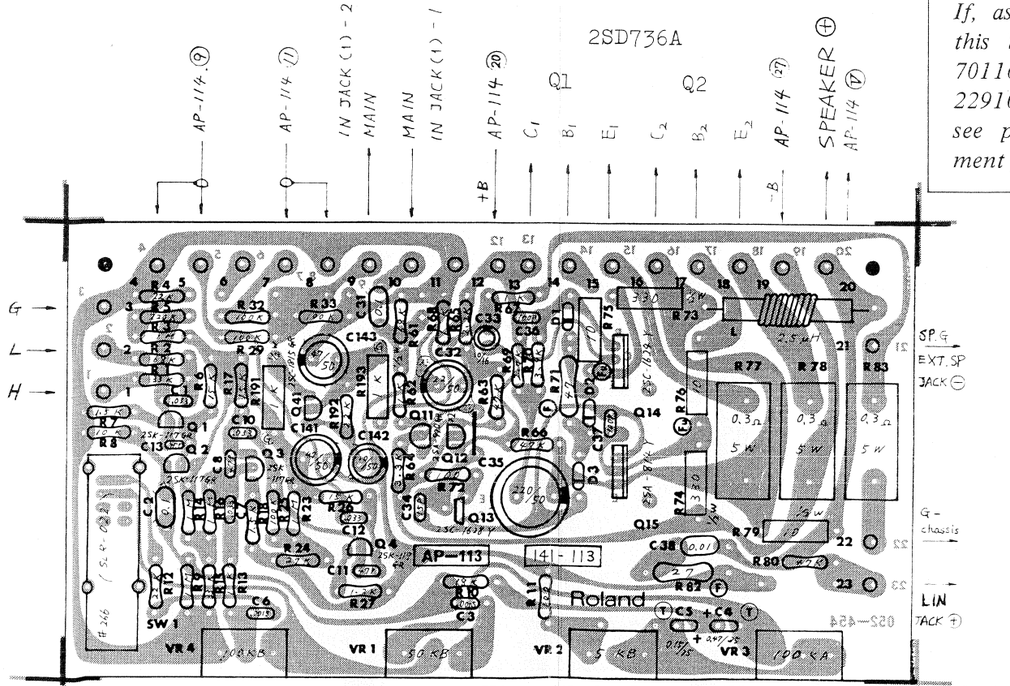
AP-114 (141-114)



V16L4PH2DN20KC B100K (028-1173) | V16L4PH2DN20KC B50K (028-1174) | V16L4PH2DN20KC B5K (028-1177) | V16L4PH2DN20KC 15A100K (028-1162) | EVH-6PGK20 C14 (028-502) | V16L4PH2DN20KC B10K (028-1176) | V16L4PH2DN20KC 15C350K (028-1183) | V16L4PH2DN20KC B10K (028-1176)

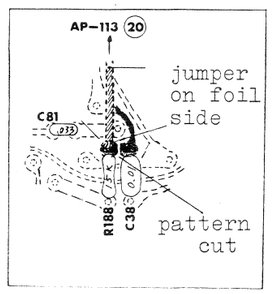
NOTE: AP-114 (X)--(Y) (6)--(Z) jumper wired

AP-113 (141-113)

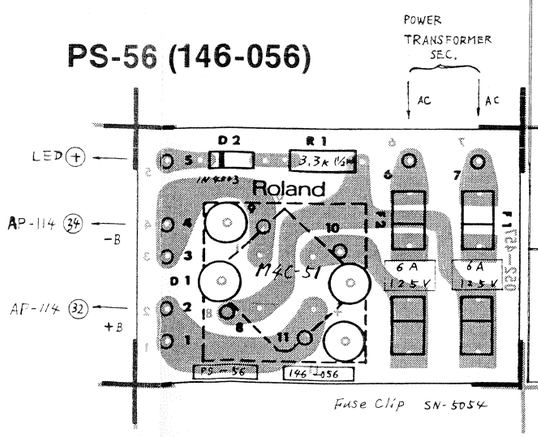


V16L4PH2DN20KC B100K(028-1173) | V16L4PH2DN20KC B50K(028-1174) | V16L4PH2DN20KC B5K(028-1177) | V16L4PH2DN20KC15 A100K (028-1162)

IMPORTANT
*If, as a substitutive for this board, PCB ASS'Y 701162800 or pcb 22910237** is supplied, see page 2 for replacement procedure.*

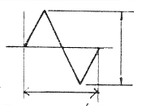


PS-56 (146-056)



CHECKING & ADJUSTMENT

CHORUS ADJUSTMENT

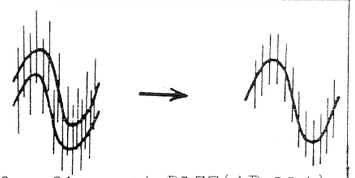


25V pp (AP-114)

Adjust VR1 (rear panel) for 1.3 sec (0.77Hz) at R161

SENSITIVITY
Chorus starts to effect with 100mV rms output at channel 1 speaker

BBD OUTPUT ADJUSTMENT

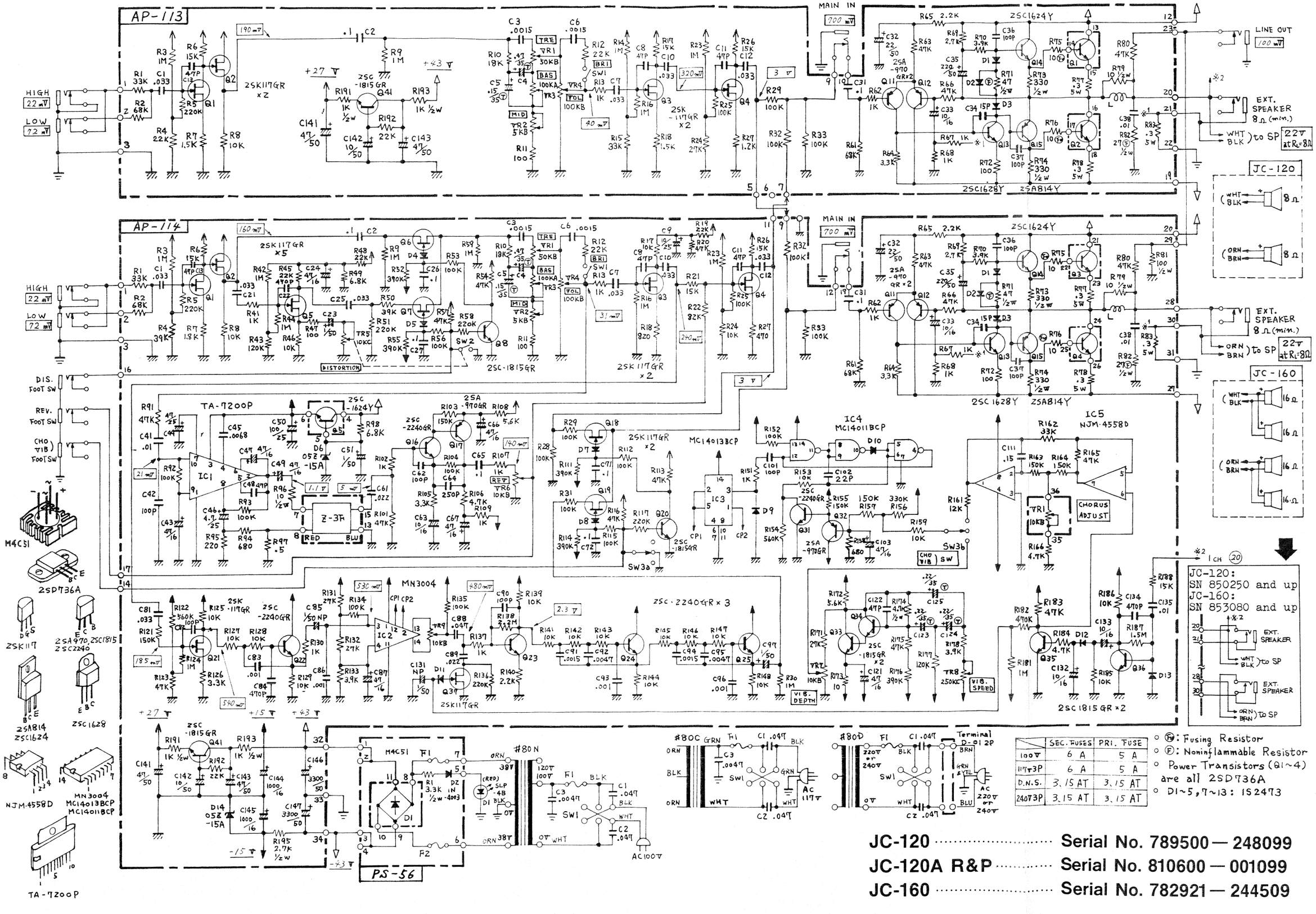


Clock Composition Elimination

Adjust VR9 (trimpot) for fig. at R137(AP-114)

CLOCK OSCILLATOR Sweep Range — 15V pp — Vibrato 65k - 130kHz, Chorus 50k - 220kHz at IC3 pin 1 (CP-2)

VIBRATO OSCILLATOR Frequency — 25V pp — at Q33 C 1.8 - 9Hz



JC-120:
SN 850250 and up
JC-160:
SN 853080 and up

	SEC. FUSES	PRI. FUSE
100V	6 A	5 A
117V 3P	6 A	5 A
D.N.S.	3.15 AT	3.15 AT
240V 3P	3.15 AT	3.15 AT

- Ⓡ: Fusing Resistor
- Ⓕ: Noninflammable Resistor
- Power Transistors (Q1~4) are all 2SD736A
- D1~5, 7~13: IS2473

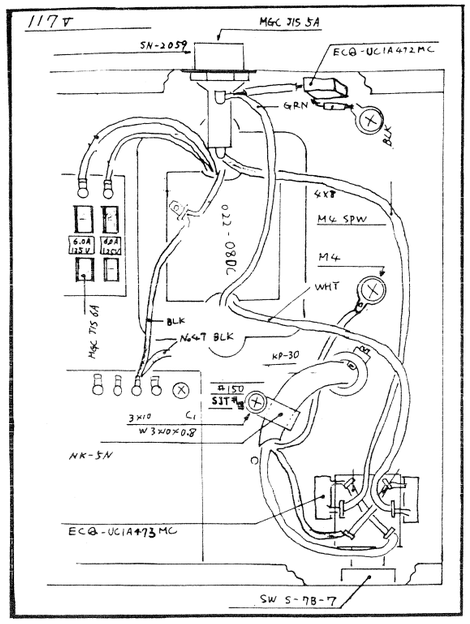
JC-120 ..... Serial No. 789500 — 248099

JC-120A R&P ..... Serial No. 810600 — 001099

JC-160 ..... Serial No. 782921 — 244509

AC CONNECTIONS

117V



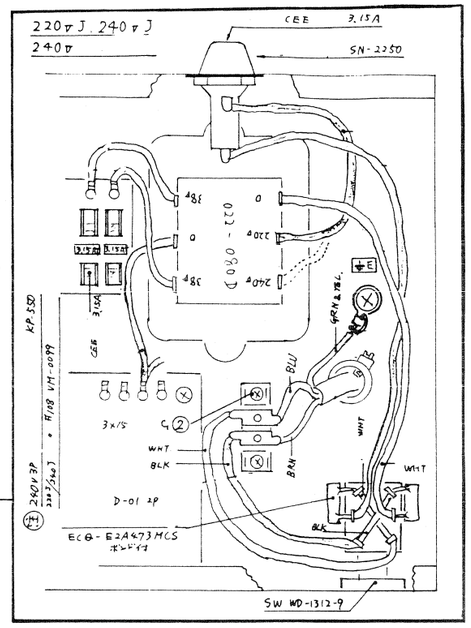
117V

Fuse
prim.
MGC JIS 5A
(008-009)
sec. MGC JIS 6A
(008-010)

Power transformer
022-080C

Capacitors
ECQUC1A472MC
(035-107)
ECQUC1A473MC
(035-108)

220/240V



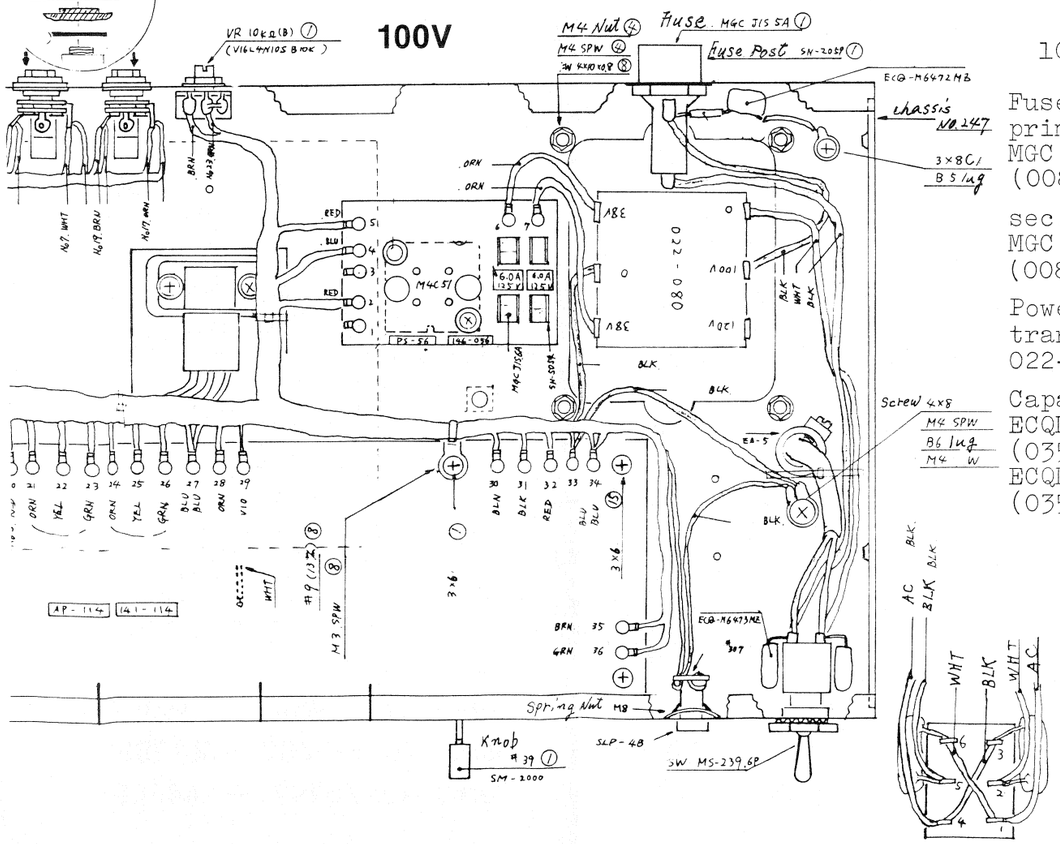
220/240V

Fuse
CEE 3.15AT
(008-072)

Power transformer
(022-080D)

Capacitor
ECQE2A473MCS
(035-310)

100V



100V

Fuses
prim.
MGC JIS 5A
(008-009)

sec.
MGC JIS 6A
(008-010)

Power
transformer
022-080

Capacitors
ECQM6472MZ
(035-101)
ECQM6473MZ
(035-102)

PARTS LIST

Please read new Parts List on P. 1 for reference.

JC-120

081-127	Cabinet no.127
089-070	Backboard no.70
072-270	Panel no.270
131-068	Vinyl cover no.68
041-019	Speaker 30-103D

JC-120A R&P

081-133	Cabinet no.133
089-070	Backboard no.70
072-082B	Panel no.82B
131-098	Vinyl cover no.98
041-032	Speaker C1230(30745A)

JC-160

081-128	Cabinet no.128
089-071	Backboard no.71 top
089-035	Backboard no.35 bottom
072-272	Panel no.272
131-073	Vinyl cover no.73
041-026	Speaker 25-33D
061-247	Chassis no.247
048-073	Heatsink no.73 2SD736A
053-311	Connector assy no.311 2SD736A
053-166	Connector assy no.166 Reverb 2SC1624
040-001	Reverb unit Z-3F
120-009	Sleeve nut no.9 3x13mm
121-017	Spring nut M8 P LED
047-025	Line cord strain relief EA-5
009-001	Jack SG7615 #5
009-004	Jack TJ-241-2
016-060	Knob no.60 rotary
016-047	Knob SM2000 lever

POWER TRANSFORMERS

022-080	PT no.80 100V
022-080C	PT no.80C 117V
022-080D	PT no.80D 220/240V

SWITCHES

001-218	MS239 6P power 100V
001-235	S-7B-7 power 117V
001-019	WD13129 power 220/240V
001-266	SLR-022 lever BRI.
001-267	ESL-3653 lever VIB/CHO

FUSES, FUSE HOLDERS

008-009	MGC 5A prim.	100/117V
008-010	MGC 6A sec.	100/117V
008-072	CEE 3.15AT	220/240V
012-020	Holder SN2059	100/117V
012-019	Holder SN2250	220/240V
012-029	Clip SN5054	sec.

* For the parts on the cabinets, see page 1.
* Resistor of $\frac{1}{4}$w, mylar and ordinary electrolytic capacitor are omitted.

PCBs

052-307	LED mounting less parts
141-113	AP-113 etch mask 052-454
141-114	AP-114 etch mask 052-455
146-056	PS-56 etch mask 052-457

POTENTIOMETERS

028-1177	V16L4PH2DN20KC B5K MID.
028-1176	V16L4PH2DN20KC B10K REV.DPT.
028-1174	V16L4PH2DN20KC B50K TRE.
028-1173	V16L4PH2DN20KC B100K VOL.
028-1162	V16L4PH2DN20KC15A100K BASS
028-1183	V16L4PH2DN20KC15C250K SPEED
028-1194	V16L4N10SB10K CHORUS-adj.
028-502	EVH6PGK20C14 10KC w/sw DIS.
028-004	EVTR4AA00B14 (SR19R) trim.

RESISTORS

044-253A	MO-4P 0.3-ohm 5W wire wound
044-398	ERD-12FJ 27-ohm $\frac{1}{2}$W nonflam.
044-401	ERD-12FJ 47-ohm $\frac{1}{2}$W nonflam.
008-118	FRNB 10-ohm $\frac{1}{4}$W fusing

CAPACITORS

032-092	0.15 mfd. tantalum
032-093	0.22 mfd. tantalum
032-095	0.47 mfd. tantalum
032-195	CE04D1H010NBPE 1 mfd. 50V
032-262	ECET50R332SW 3300 mfd 50V electrolytic larg can
035-103	ECQM2103KZ 0.01 mfd 200V polyester

TRANSISTORS

017-119	2SA970-GR or 2SA841-GR (except Q32)
017-030	2SA814-Y
017-123	2SC2240-GR or 2SC1681-GR (except Q31)
017-106	2SC1815-GR or 2SC373
017-028	2SC1628-Y
017-029	2SC1624-Y
017-134	2SD736A-(B) or (C)
017-103	2SK117-GR FET

DIODES

018-095	M4C-51 rectifier bridge
018-014	1S2473
018-018	1N4003
018-025	05Z-15A zener
019-014	SLP-4B LED w/lens

ICs

020-028	TA7200P
020-170	MC-14011BCP
020-179	MC-14013BCP
020-063	MN-3004 BBD
020-064	NJM-4558DP or μPC4558C